

# Service Hints



TH-P65VT30S

## Plasma Television

<PDP 2011 Model>

TH-P65/50/42VT30S

TH-P55/50/42ST30S

TH-P42UT30S

TH-P65/50VT30G

TH-P50/42ST30G

TH-P50/42UT30G

## Troubleshooting Guide

- Ver 1.1-

This service hints is published for technicians and engineers for repair. And it gives you the information how to judge the defective board of PDP. In the future, we will improve the contents for more easy diagnostic and troubleshooting.

Please file and use this Service Hints together with the main service manual and other publications related to models.

### WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.




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# **1. 2011 PDP Line up & Feature Comparison (3D model)**

# 1. 2011 PDP Line up & Feature Comparison

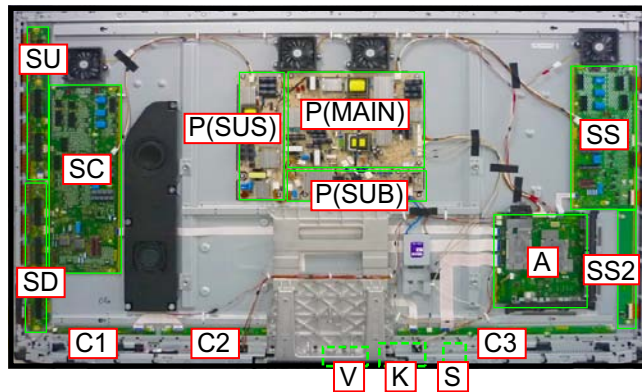
		VT30 Series	ST30 Series	UT30 Series
				
Picture	Size	65/50/42	55/50/42	50/42
	Full HD 3D	Y	Y	Y
	3D Active Shutter Eyewear	2 included	Not Included	Not Included
	Contrast Ratio	5,000,000:1	5,000,000:1	2,000,000:1
	Shades of Gradation	6,144	6,144	6,144
	Moving Picture Resolution	1,080 lines	1,080 lines	1,080 lines
	THX Mode	Y	—	—
	ISFccc	Y	—	—
	3D Colour Management	Y	—	—
Sound	Speakers	Dual Speaker, Woofer	Full-range x 2 (L, R)	Full-range x 2 (L, R)
Networking	HDMI Input	4 (4 side)	4 (1 side, 3 rear)	3 (1 side, 2 rear)
	Support Feature	Audio Return Channel (Input 2)	Audio Return Channel (Input 2)	Audio Return Channel (Input 2)
	USB	3 (3 side)	3 (3 side)	3 (2 side, 1 rear)
	PC input	Y	Y	Y
	VIERA Connect	Y	Y	Y
	Wireless LAN Adaptor	Y (included)	WiFi Ready	WiFi Ready
	DLNA	Y	Y	Y
Others	Swivel	Only 50/42	Only 50/42	—
	One-Sheet-of-Glass Design	Y	—	—

## **2. PCB Location & Function (3D model)**

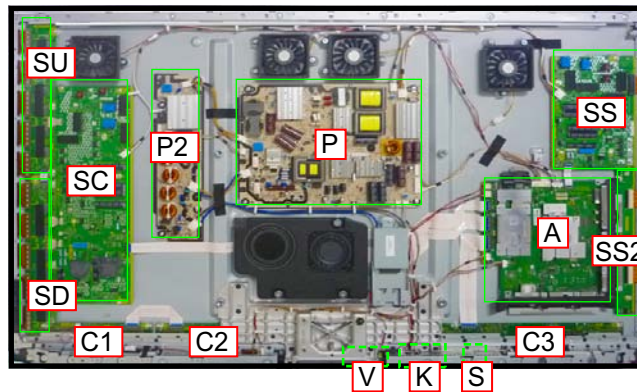
## 2. PCB Location & Function

## VT30 Series

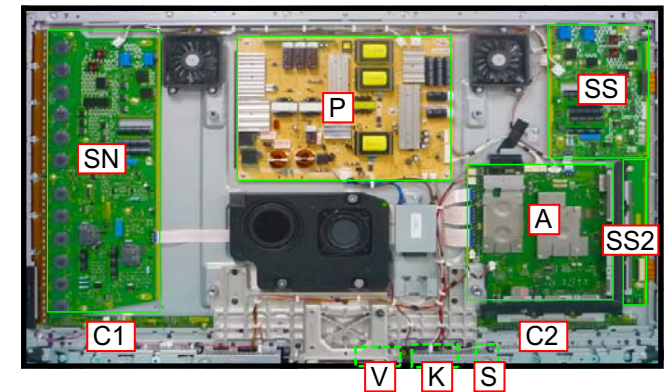
TH-P65VT30S / G



TH-P50VT30S / G



TH-P42VT30S



Board Name	Function	Parts Number
P	Power Supply Non serviceable. P(MAIN)-Board should be exchanged for service.	N0AE6KM00008
	Power Supply Non serviceable. P(SUS)-Board should be exchanged for service.	N0AE6KM00004
	Power Supply Non serviceable. P(SUB)-Board should be exchanged for service.	N0AE6KM00005
A	Main AV input, processing	TZTNP01MMUS (for TH-P65VT30S) TZTNP01MCUG (for TH-65VT30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1MTUA
S	Power Switch	TXN/S1MTUA
V	3D Eyewear transmitter	TXN/V1MTUA
C1	Data Driver (Lower Right)	TXNC111UHK
C2	Data Driver (Lower Center)	TXNC211UHK
C3	Data Driver (Lower Left)	TXNC311UHK
SC	Scan Drive	TXNSC11UHK
SS	Sustain Drive	TXNSS11UHK
SS2	Sustain out (Lower)	TXNSS211UHK
SU	Scan out (Upper) Non serviceable. SU-Board should be exchanged for service.	TXNSU11UHK
SD	Scan out (Lower) Non serviceable. SD-Board should be exchanged for service.	TXNSD11UHK
—	—	—

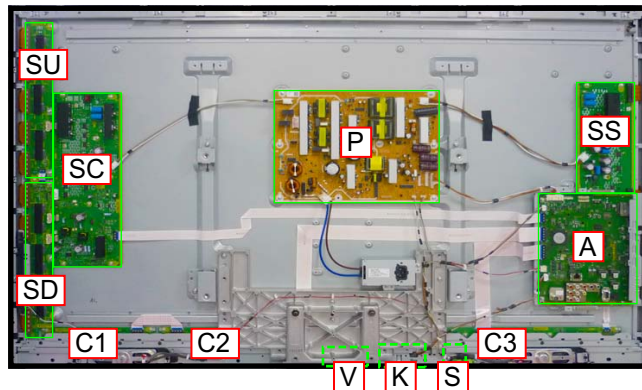
Board Name	Function	Parts Number
P	Power Supply	TXNP11QJUE
P2	Power Supply	TXNP21PNUB50
—	—	—
A	Main AV input, processing	TZTNP01MNUS (for TH-P50VT30S) TZTNP01MDUG (for TH-P50VT30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NNUA42
S	Power Switch	TXN/S1MZUJ46
V	3D Eyewear transmitter	TXN/V1MZUJ46
C1	Data Driver (Lower Right)	TXNC11NBUJ50
C2	Data Driver (Lower Center)	TXNC211GGK50
C3	Data Driver (Lower Left)	TXNC311GGK50
SC	Scan Drive	TXNSC11GGKB
SS	Sustain Drive	TXNSS11GGK50
SS2	Sustain out (Lower)	TXNSS211GGK
SU	Scan out (Upper) Non serviceable. SU-Board should be exchanged for service.	TXNSU1MUUA50
SD	Scan out (Lower) Non serviceable. SD-Board should be exchanged for service.	TXNSD1NBUJ50
—	—	—

Board Name	Function	Parts Number
P	Power Supply	TXN/P1QKUE42
—	—	—
—	—	—
A	Main AV input, processing	TZTNP01MPUS (for TH-P42VT30S)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NNUA42
S	Power Switch	TXN/S1MZUJ46
V	3D Eyewear transmitter	TXN/V1MZUJ46
C1	Data Driver (Lower Right)	TXNC111DHK42
C2	Data Driver (Lower Left)	TXNC211DHK42
—	—	—
—	—	—
SS	Sustain Drive	TXNSS11DHK42
SS2	Sustain out (Lower)	TXNSS211DHK
—	—	—
—	—	—
SN	Scan Drive	TXNSN11DHKB

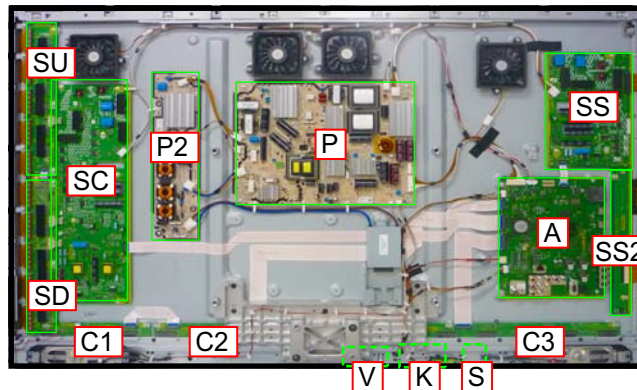
## 2. PCB Location & Function

## ST30 Series

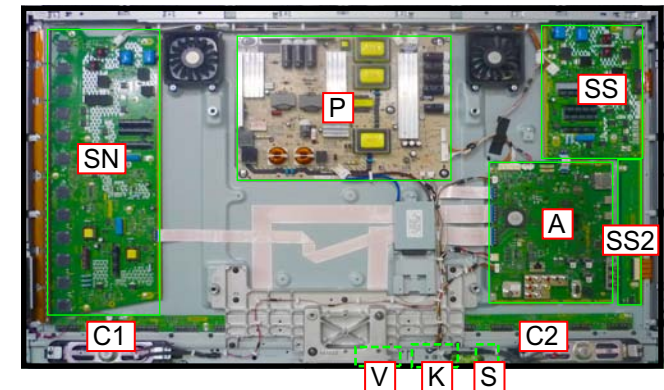
TH-P55ST30S



TH-P50ST30S / G



TH-P42ST30S / G



Board Name	Function	Parts Number
P	Power Supply Non serviceable. P-Board should be exchanged for service.	TXN/P1MZUA
—	—	—
A	Main AV input, processing	TZTNP01MQUS (for TH-P55GT30S)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1MTUA
S	Power Switch	TXN/S1MTUA
V	3D Eyewear transmitter	TXN/V1MTUA
C1	Data Driver (Lower Right)	TXNC11MTUA
C2	Data Driver (Lower Center)	TXNC21MZUA
C3	Data Driver (Lower Left)	TXNC31MZUA
SC	Scan Drive	TXNSC1MZUA
SS	Sustain Drive	TXNSS1MZUA
—	—	—
SU	Scan out (Upper) Non serviceable. SU-Board should be exchanged for service.	TXNSU1MZUA
SD	Scan out (Lower) Non serviceable. SD-Board should be exchanged for service.	TXNSD1MTUA
—	—	—

Board Name	Function	Parts Number
P	Power Supply	TXNP11QJUE
P2	Power Supply	TXNP21PNUB50
A	Main AV input, processing	TZTNP01MRUS (for TH-P50ST30S) TZTNP01MGUG (for TH-P50ST30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NCUA42
S	Power Switch	TNPA5394
V	3D Eyewear transmitter	TNPA5396
C1	Data Driver (Lower Right)	TNPA5318
C2	Data Driver (Lower Center)	TXNC211GGK50
C3	Data Driver (Lower Left)	TXNC311GGK50
SC	Scan Drive	TXNSC11GGK50
SS	Sustain Drive	TXNSS11GGK50
SS2	Sustain out (Lower)	TXNSS211GGK50
SU	Scan out (Upper) Non serviceable. SU-Board should be exchanged for service.	TXNSU1MUUA50
SD	Scan out (Lower) Non serviceable. SD-Board should be exchanged for service.	TNPA5337
—	—	—

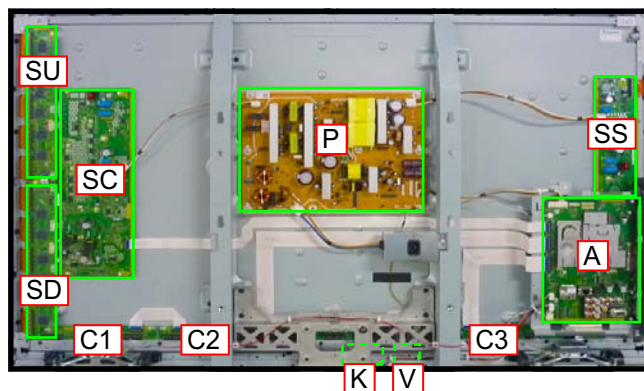
Board Name	Function	Parts Number
P	Power Supply	TXN/P1QKUE42
—	—	—
A	Main AV input, processing	TZTNP01MSUS (for TH-P42ST30S) TZTNP01MHUG (for TH-P42ST30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NCUA42
S	Power Switch	TNPA5394
V	3D Eyewear transmitter	TNPA5396
C1	Data Driver (Lower Right)	TNPA5314
C2	Data Driver (Lower Left)	TXNC211DHK42
—	—	—
—	—	—
SS	Sustain Drive	TXNSS11DHK42
SS2	Sustain out (Lower)	TXNSS211DHK
—	—	—
—	—	—
SN	Scan Drive	TXNSN11DHK42



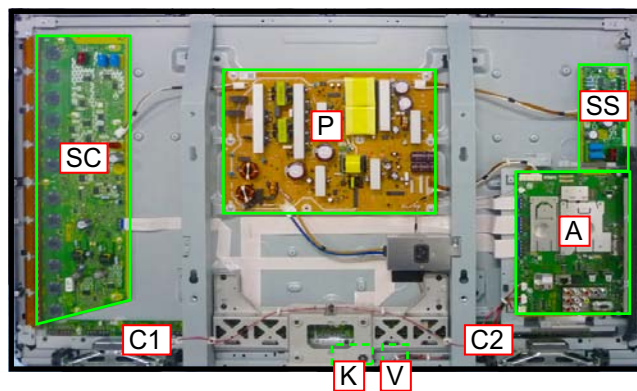
## 2. PCB Location & Function

## UT30 Series

TH-P50UT30G



TH-P42UT30S / G



Board Name	Function	Parts Number
P	Power Supply Non serviceable. P-Board should be exchanged for service.	N0AE6KK00009
A	Main AV input, processing	TZTNP01NEUG (for TH-P50UT30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NNUA42
V	3D Eyewear transmitter	TXN/V1QYUJ46
C1	Data Driver (Lower Right)	TXNC11NBUJ50
C2	Data Driver (Lower Center)	TXNC21NBUJ50
C3	Data Driver (Lower Left)	TXNC31NBUJ50
SC	Scan Drive	TXNSC11JGK50
SS	Sustain Drive	TXNSS11JGK50
SU	Scan out (Upper) Non serviceable. SU-Board should be exchanged for service.	TXNSU11JGK50
SD	Scan out (Lower) Non serviceable. SD-Board should be exchanged for service.	TXNSD11JGK50
—	—	—

Board Name	Function	Parts Number
P	Power Supply Non serviceable. P-Board should be exchanged for service.	N0AE6KK00008
A	Main AV input, processing	TZTNP01NAUS (for TH-P42UT30S) TZTNP01NEUG (for TH-P42ST30G)
K	Remote receiver, Power LED, C.A.T.S sensor	TXN/K1NNUA42
V	3D Eyewear transmitter	TXN/V1QYUJ46
C1	Data Driver (Lower Right)	TXNC111DHK42
C2	Data Driver (Lower Left)	TXNC211FHK42
—	—	—
—	—	—
SS	Sustain Drive	TXNSS11FHK42
—	—	—
—	—	—
SN	Scan Drive	TXNSN11FHK42



### **3. PCB List (3D model)**

### 3. PCB List

	VT30 series			ST30 series			UT30 series	
Board	TH-P65VT30S TH-P65VT30G	TH-P50VT30S TH-P50VT30G	TH-P42VT30S	TH-P55ST30S	TH-P50ST30S TH-P50ST30G	TH-P42ST30S TH-P42ST30G	TH-P50UT30G	TH-P42UT30S TH-P42UT30G
P	N0AE6KM00008 (MAIN)	TXNP11QJUE	TXN/P1QKUE42	TXN/P1MZUA	TXNP11QJUE	TXN/P1QKUE42	N0AE6KK00009	N0AE6KK00008
	N0AE6KM00004 (SUS)	TXNP21PNUB50 (P2)	----	----	TXNP21PNUB50 (P2)	----	----	----
	N0AE6KM00005 (SUB)	----	----	----	----	----	----	----
A	TZTNP01MMUS TZTNP01MCUG	TZTNP01MNUS TZTNP01MDUG	TZTNP01MPUS	TZTNP01MQUS	TZTNP01MRUS TZTNP01MGUG	TZTNP01MSUS TZTNP01MHUG	TZTNP01NEUG	TZTNP01NAUS TZTNP01NEUG
K	TXN/K1MTUA	TXN/K1NNUA42	TXN/K1NNUA42	TXN/K1MTUA	TXN/K1NCUA42	TXN/K1NCUA42	TXN/K1NNUA42	TXN/K1NNUA42
S	TXN/S1MTUA	TXN/S1MZUJ46	TXN/S1MZUJ46	TXN/S1MTUA	TNPA5394	TNPA5394	----	----
V	TXN/V1MTUA	TXN/V1MZUJ46	TXN/V1MZUJ46	TXN/V1MTUA	TNPA5396	TNPA5396	TXN/V1QYUJ46	TXN/V1QYUJ46
C1	TXNC111UHK	TXNC11NBUJ50	TXNC111DHK42	TXNC11MTUA	TNPA5318	TNPA5314	TXNC11NBUJ50	TXNC111DHK42
C2	TXNC211UHK	TXNC211GGK50	TXNC211DHK42	TXNC21MZUA	TXNC211GGK50	TXNC211DHK42	TXNC21NBUJ50	TXNC211FHK42
C3	TXNC311UHK	TXNC311GGK50	----	TXNC31MZUA	TXNC311GGK50	----	TXNC31NBUJ50	----
SC	TXNSC11UHK	TXNSC11GGKB	----	TXNSC1MZUA	TXNSC11GGK50	----	TXNSC11JGK50	----
SS	TXNSS11UHK	TXNSS11GGK50	TXNSS11DHK42	TXNSS1MZUA	TXNSS11GGK50	TXNSS11DHK42	TXNSS11JGK50	TXNSS11FHK42
SS2	TXNSS211UHK	TXNSS211GGK	TXNSS211DHK		TXNSS211GGK50	TXNSS211DHK	----	----
SU	TXNSU11UHK	TXNSU1MUUA50	----	TXNSU1MZUA	TXNSU1MUUA50	----	TXNSU11JGK50	----
SD	TXNSD11UHK	TXNSD1NBUJ50	----	TXNSD1MTUA	TNPA5337	----	TXNSD11JGK50	----
SN	----	----	TXNSN11DHKB	----	----	TXNSN11DHK42	----	TXNSN11FHK42

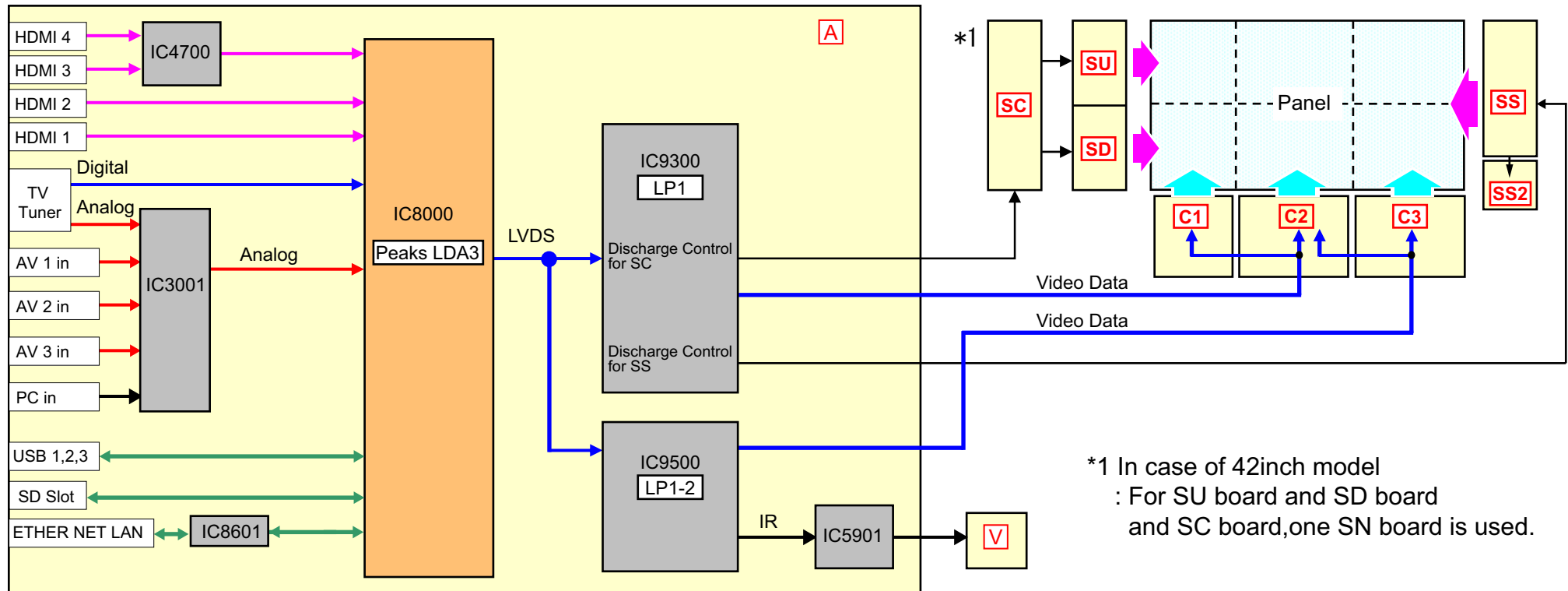
## **4. Block Diagram (3D Model)**

## 4. Block Diagram

## Signal Processing Circuit (1) VT30 series

### <PCB Function>

[e.g. TH-P50VT30S]



**IC3001**  
: Video Switch  
(Audio Switch)

**IC8601**  
: ETHER NET I/F

**IC4700**  
: HDMI SW  
**IC8000**  
: Peaks LDA3  
(Digital Video Processor)  
**IC5901**  
: IR LED DRIVER

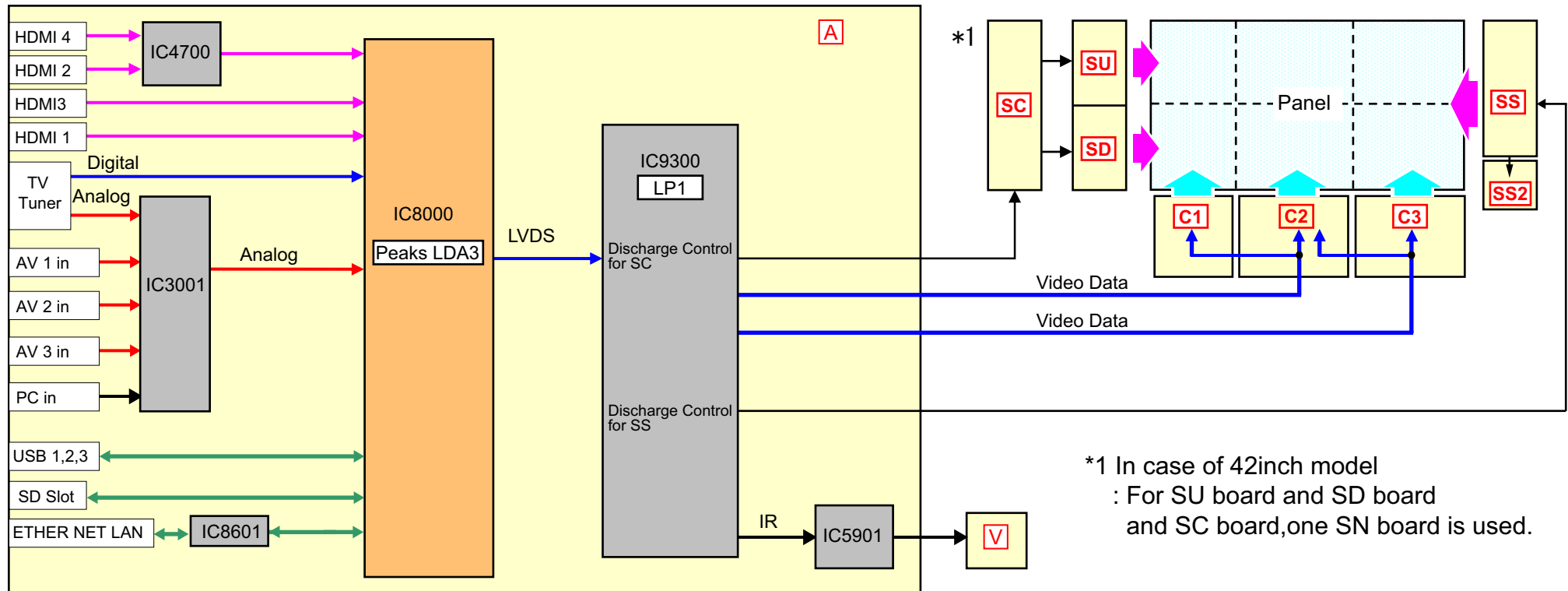
**IC9300**  
: LP1  
[ Sub Field Processor,  
Discharge Control  
Plasma AI ]  
**IC9500**  
: LP1-2  
Sub Field Processor,  
Plasma AI

## 4.Block Diagram

## Signal Processing Circuit (2) ST30 series

### <PCB Function>

[e.g.TH-P50ST30S]



**IC3001**  
: Video Switch  
(Audio Switch)

**IC8601**  
: ETHER NET I/F

**IC4700**  
: HDMI SW  
**IC8000**  
: Peaks LDA3  
(Digital Video Processor)  
**IC5901**  
: IR LED DRIVER

**IC9300**  
: LP1  
[ Sub Field Processor,  
Discharge Control  
Plasma AI ]

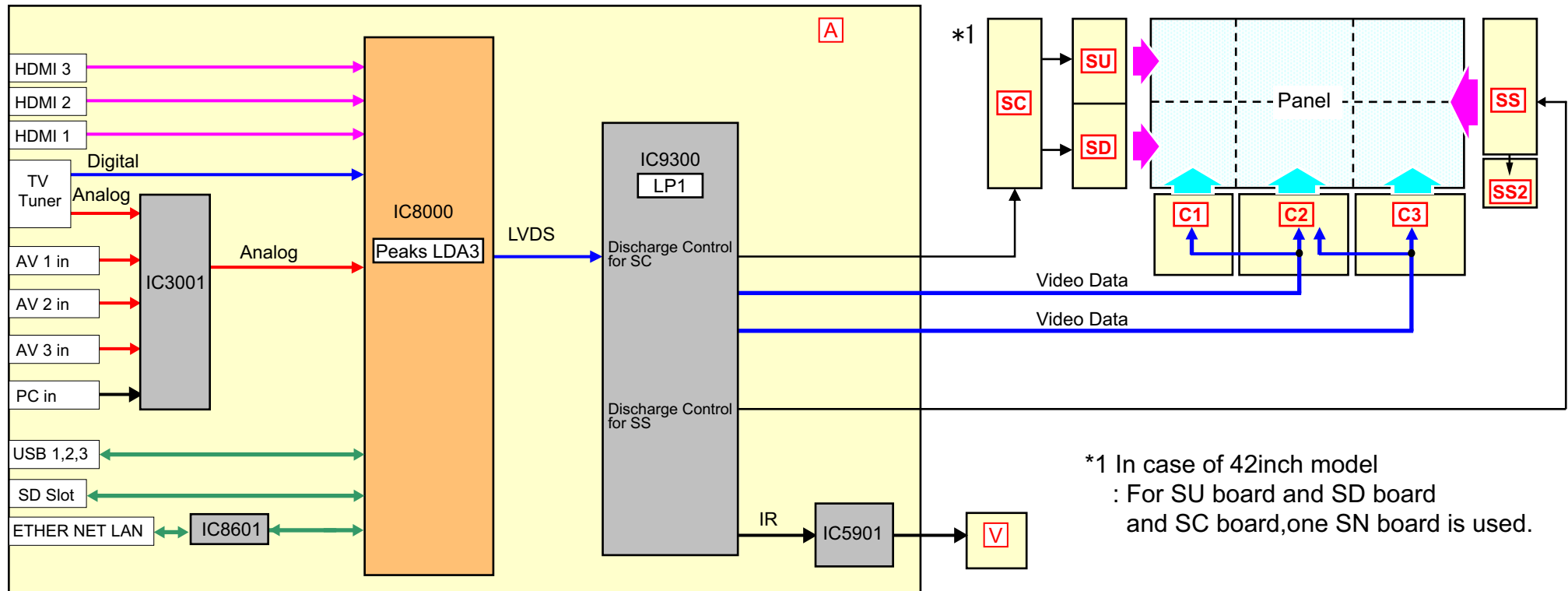
\*1 In case of 42inch model  
: For SU board and SD board  
and SC board,one SN board is used.

## 4.Block Diagram

## Signal Processing Circuit (3) UT30 series

<PCB Function>

[e.g.TH-P50UT30G]



**IC3001**  
: Video Switch  
(Audio Switch)

**IC8601**  
: ETHER NET I/F

**IC8000**  
: Peaks LDA3  
(Digital Video Processor)

**IC5901**  
: IR LED DRIVER

**IC9300**  
: LP1  
[ Sub Field Processor,  
Discharge Control  
Plasma AI ]

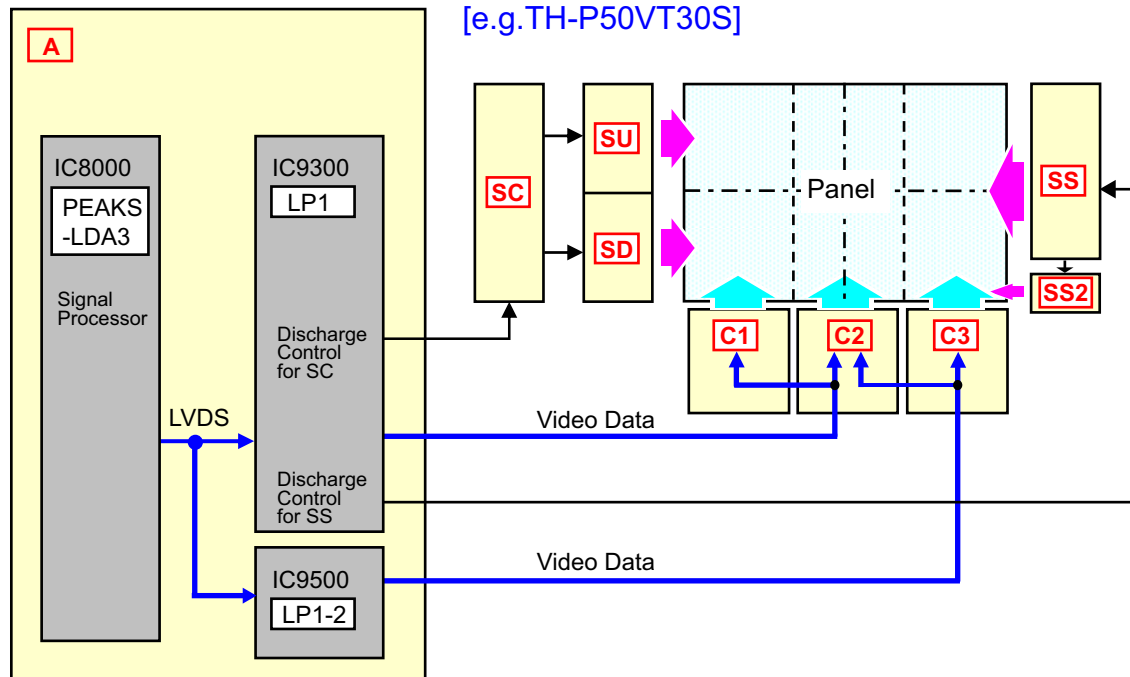
\*1 In case of 42inch model  
: For SU board and SD board  
and SC board, one SN board is used.

## **5. Troubleshooting (3D model)**



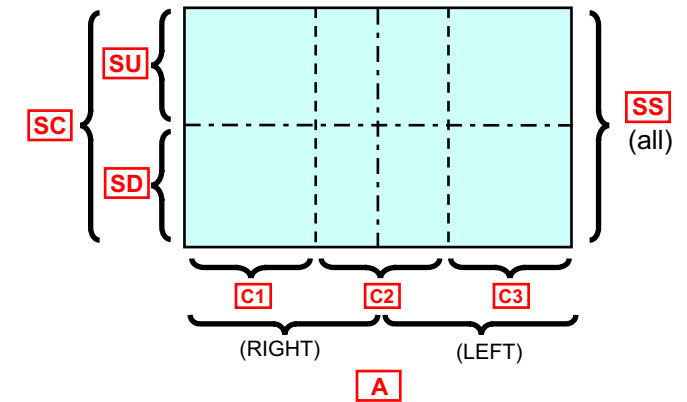
## Relation of board and display area

<Display device block diagram>



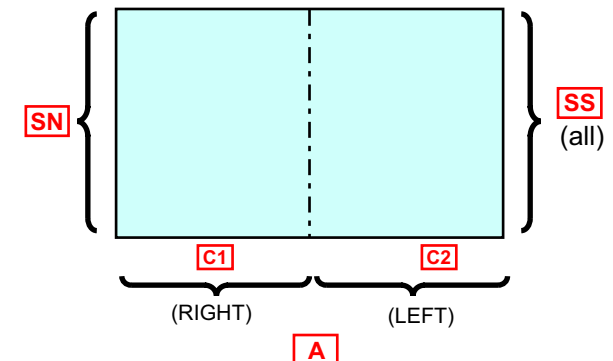
Over 50 inch

(Back side view)



42 inch

(Back side view)

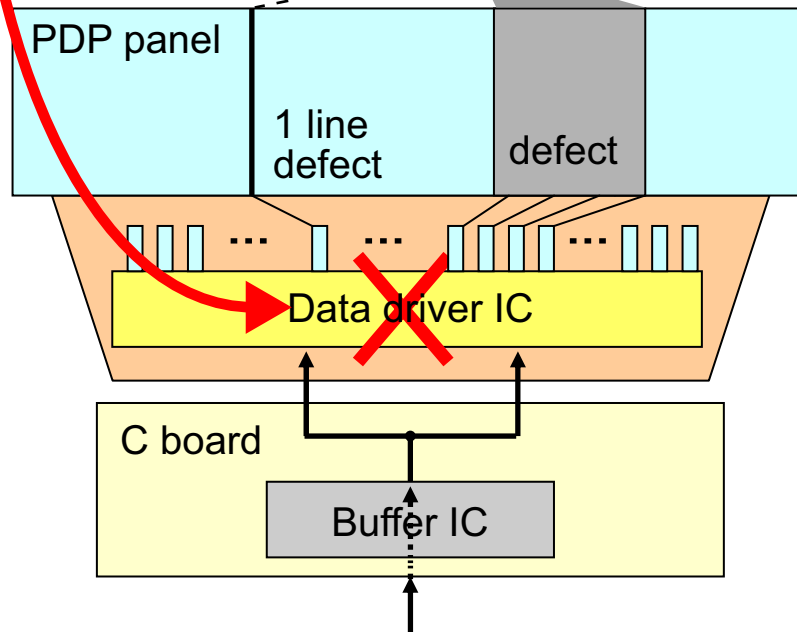


### PDP panel defective (Data driver IC defective)

Width is narrower than FPC

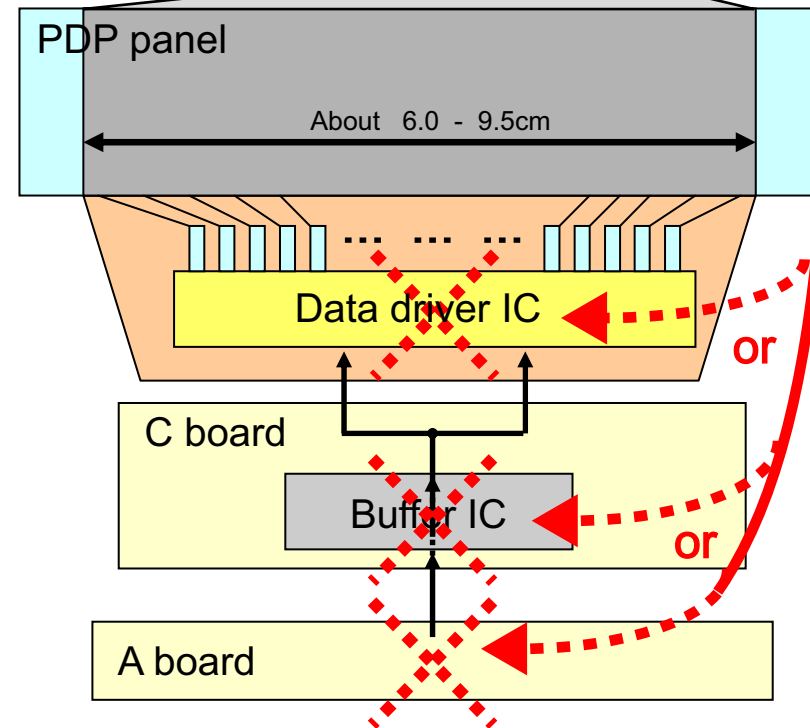


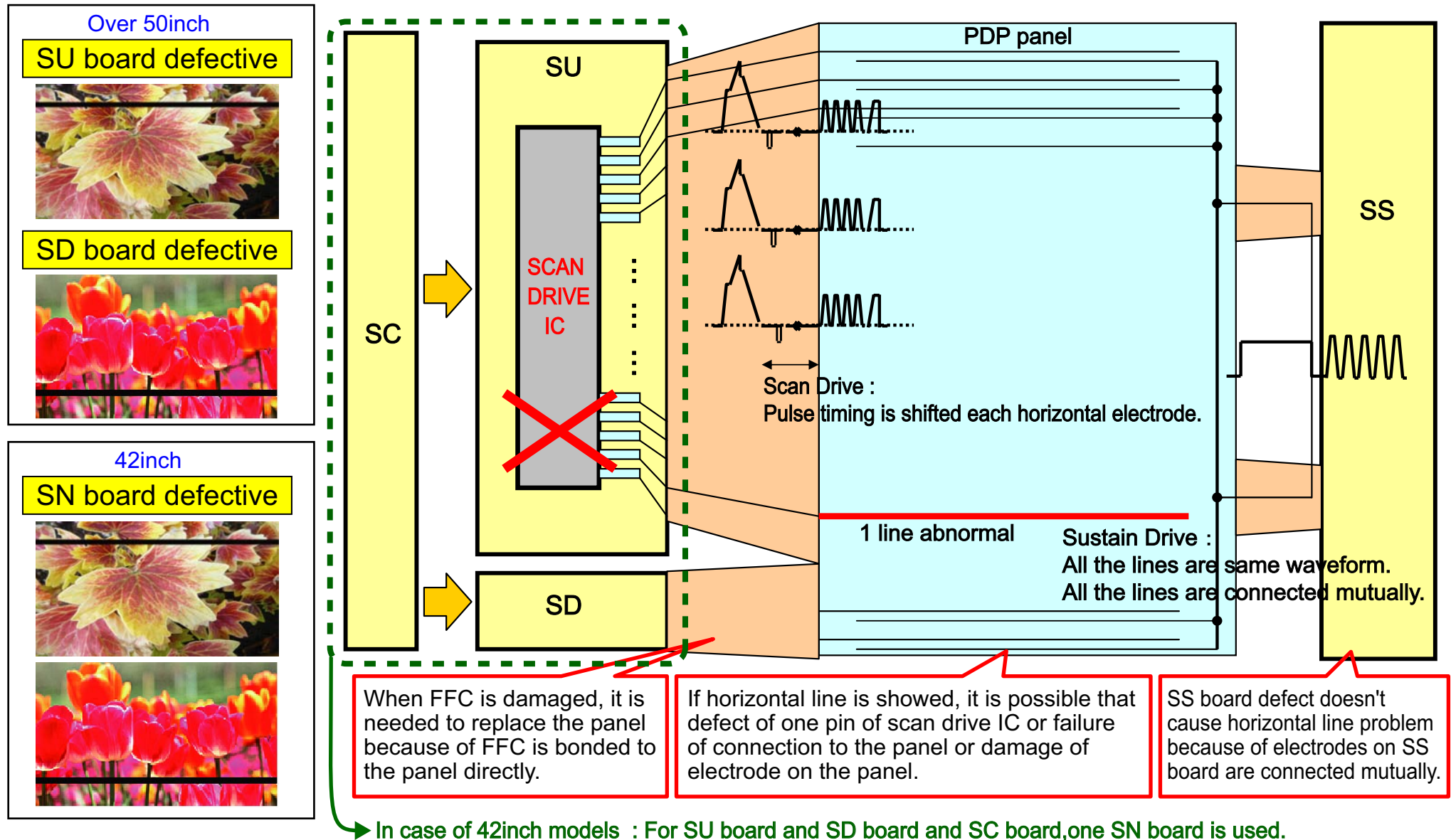
Data driver IC defect= PDP panel defect



### Data driver IC or C or A board defective

Width is same as FPC





## 5.Troubleshooting for picture trouble

## Picture trouble [Function of diagnosis]

### < Mirror function >

Mirror Function : Picture can be reversed left and right or up and down.

For vertical lines problems, this feature can help to determine if the problem is the A board or the panel.

If the position of the line/lines changes when performing this function, the A board is possibly defective.

The rear cover does not have to be removed to do this.

To enter the Mirror Function.

From the Service Mode Menu, Press 1 or 2 to select "OPTION".

Press 3 or 4 to select "MIRROR".

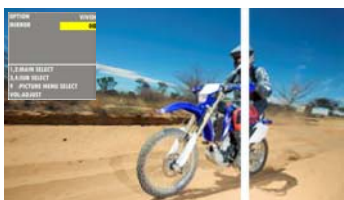
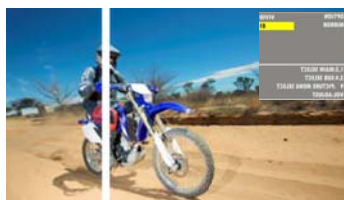
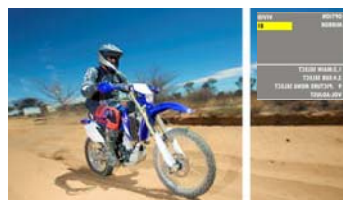

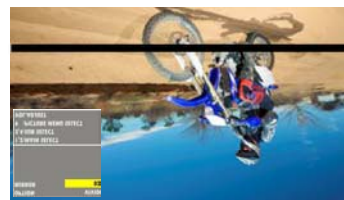

Press the VOLUME up or down button to change the Mirror's data.

Data = 00 Default data (Mirror function is off).

Data = 01 Picture is reversed left and right.

Data = 02 Picture is reversed up and down.

<How to diagnose by using "Mirror function">


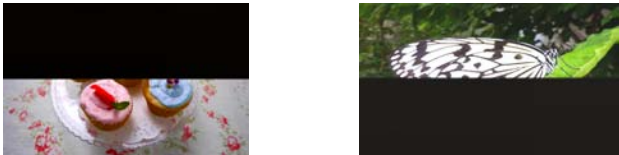


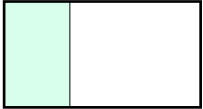
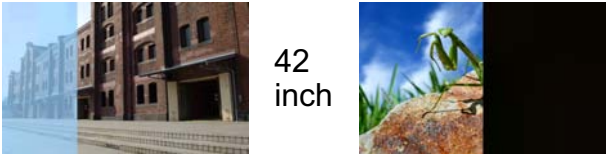

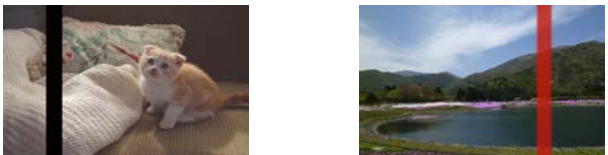

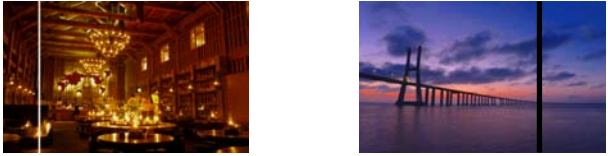

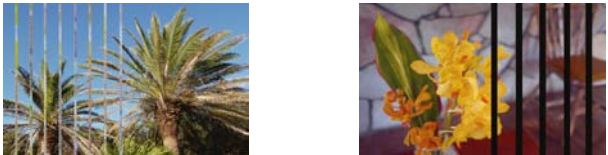
	Data : 00	Data : 01	
		the picture & line : reverse	only the picture : reverse
Vertical Line			
		Defective Block : A board	Defective Block : Panel or C board
	Data : 00	Data : 02	
		the picture & line : reverse	only the picture : reverse
Horizontal Line			
		Defective Block : A board	Defective Block : Panel or SD board *

\* In case of 42inch models : For SU board and SD board and SC board,one SN board is used.

## 5.Troubleshooting for picture trouble

## Summary of picture trouble

< Some part of screen : VT30 / ST30 / UT30 series >

Symptom	Actual symptom	Defective board
Trouble at Upper or Lower half 		<b>Over 50inch : SU / SD</b> <b>42inch : SN</b>
Horizontal line (Upper or Lower side) 		<b>Over 50inch : SU / SD</b> <b>or panel</b> <b>42inch : SN or panel</b>
Trouble at Left or Center or Right part (42inch model : Left or Right half) 	Over 50inch  42 inch	<b>Over 50inch : C1-C3</b> <b>42inch : C1,C2</b>
Vertical line (Width is same as FPC) 		<b>C or A or PDP panel</b>
Vertical line (Width is narrower than FPC) 		<b>PDP panel</b>
Regular bar 		<b>A</b>

## 5.Troubleshooting for picture trouble

## Diagnosis by Test Pattern

### <Model>

VT30, ST30, UT30 series

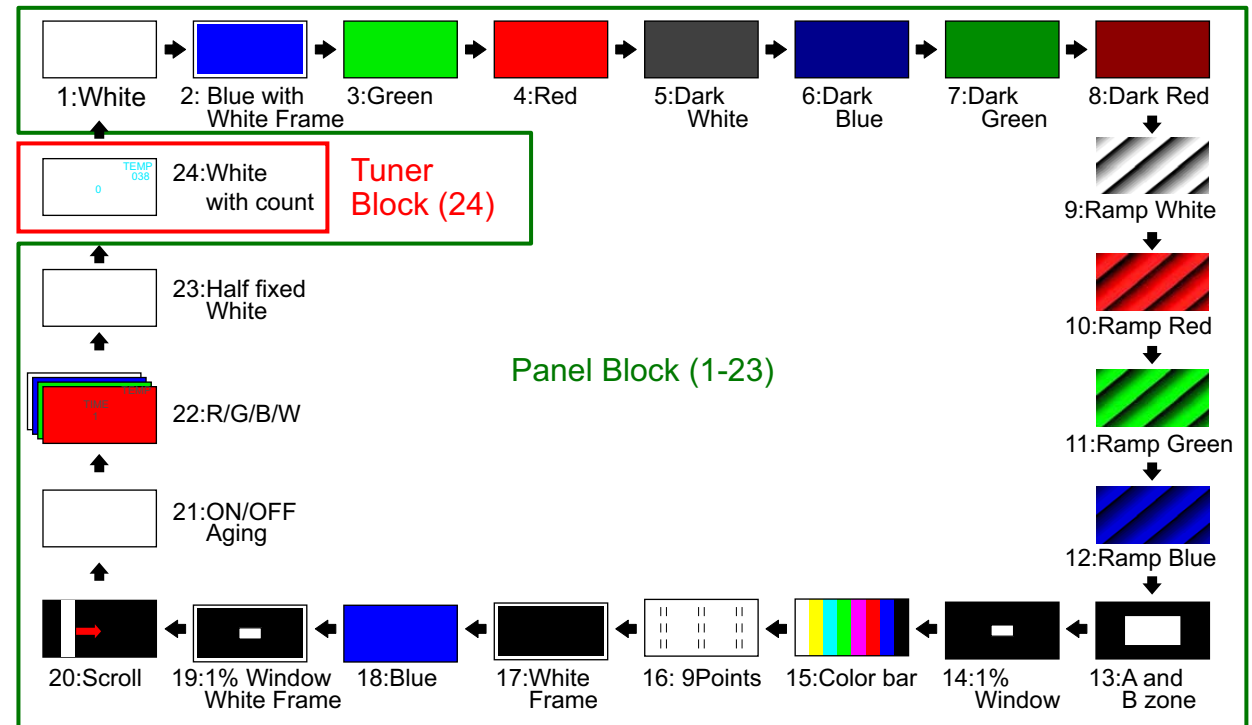
### <Symptom>

Picture Noise, Full Vertical Line, Abnormal color

### <How to enter the Test Pattern>

1. Press the "**VOLUME -**" on the TV set and push "**i**" button of remote controller 3 times at the same time.
2. After this procedure, you can enter "Service Mode" and select "**AGING**", then "Test pattern" will appear.
3. Push "3" button of Remote Controller to select the test pattern mode to forward.
4. Push "4" button of Remote Controller to select the test pattern mode to reverse.

### <Test Pattern (Normal)>



### <Diagnosis>

How to diagnose by using test pattern

Abnormal picture  
(Picture Noise, Full Vertical Line, Abnormal color)




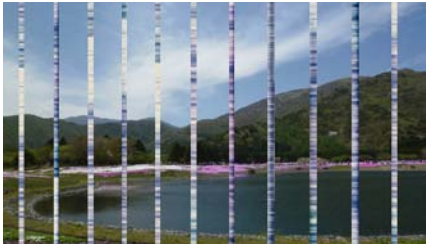



Test pattern (1-23)	Defective Block (Board)
Abnormal	Panel Block (A Board or Panel)
Normal	Tuner Block (A Board)

No picture

Test pattern	Defective Block (Board)
No picture	Panel Block (A Board or Panel)
O.K	Tuner Block (A Board)



## < All area of screen >

Symptom	Actual symptom	Defective board
Irregular Color	 	<div>A board</div>
All vertical line	 	<div>A board</div>
Abnormal electric discharge	  	<div>Over 50inch : SC / SS board  in case of 42inch SN / SS board</div>



## **6. No Power Troubleshooting (When LED doesn't Blink)**

### [ Model ]

TH-P65/50/42VT30S, TH-P55/50/42ST30S

TH-P65/50VT30G, TH-P50/42ST30G

	Power LED error code	Contents	Check points
1	Power LED is Off (No picture/No sound)	P-board abnormal P15V:voltage down F15V:voltage down	P-board SN/SC-board SS-board A-board
2	Power LED is green blinks [High-speed blinking] (No picture/No sound)	P15V:voltage down	P-board SN/SC-board SS-board A-board
3	Power LED is green (No picture/No sound)	P15V:voltage down	SN/SC-board A-board

Troubleshooting Flowcharts  
: refer to 25 page - 27 page

### [ Model ]

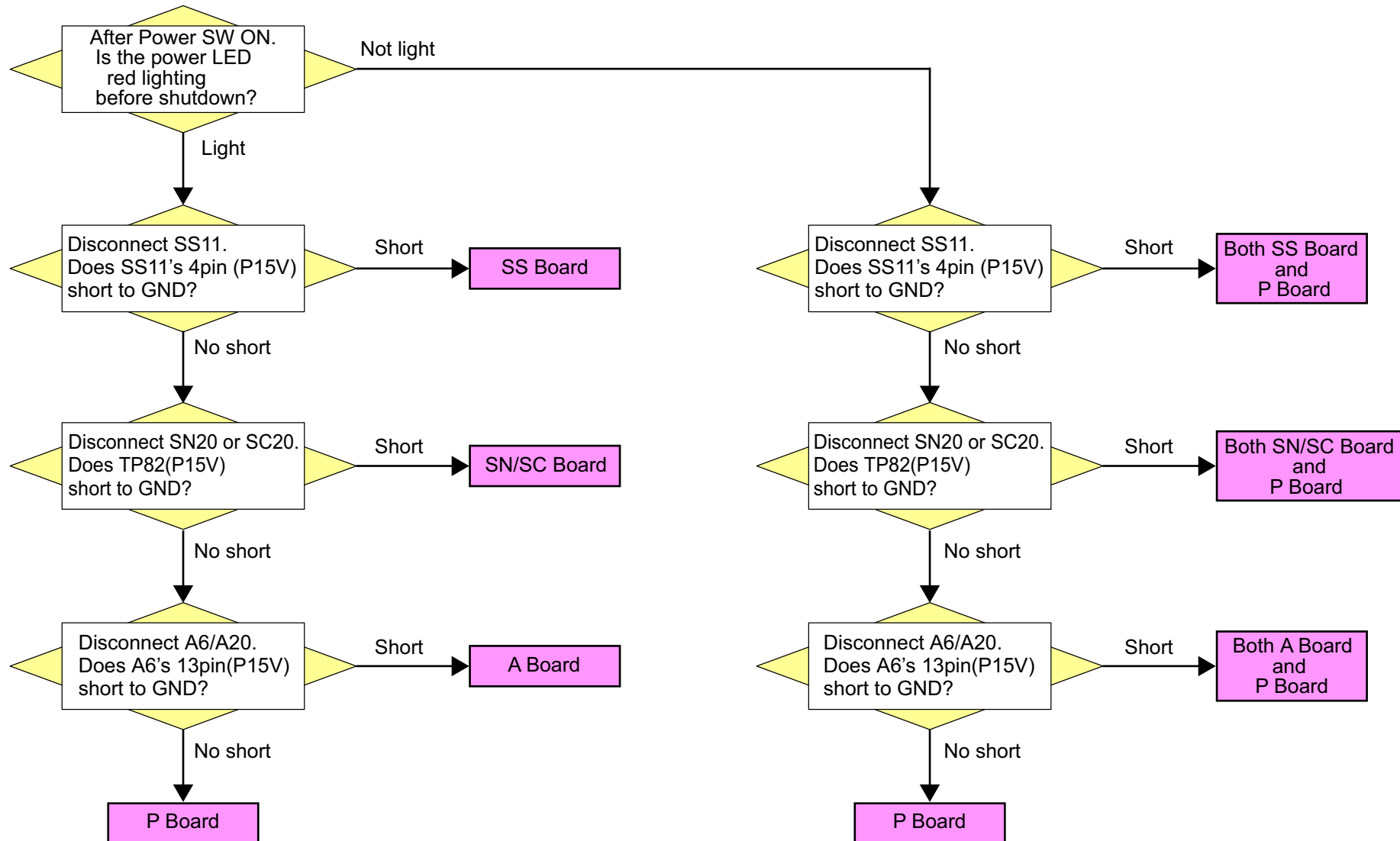
TH-P42UT30S, TH-P50/42UT30G

	Power LED error code	Contents	Check points
1	Power LED is green (No picture/No sound)	Vsus:voltage down P15V:voltage down	P-board SN/SC-board SS-board A-board

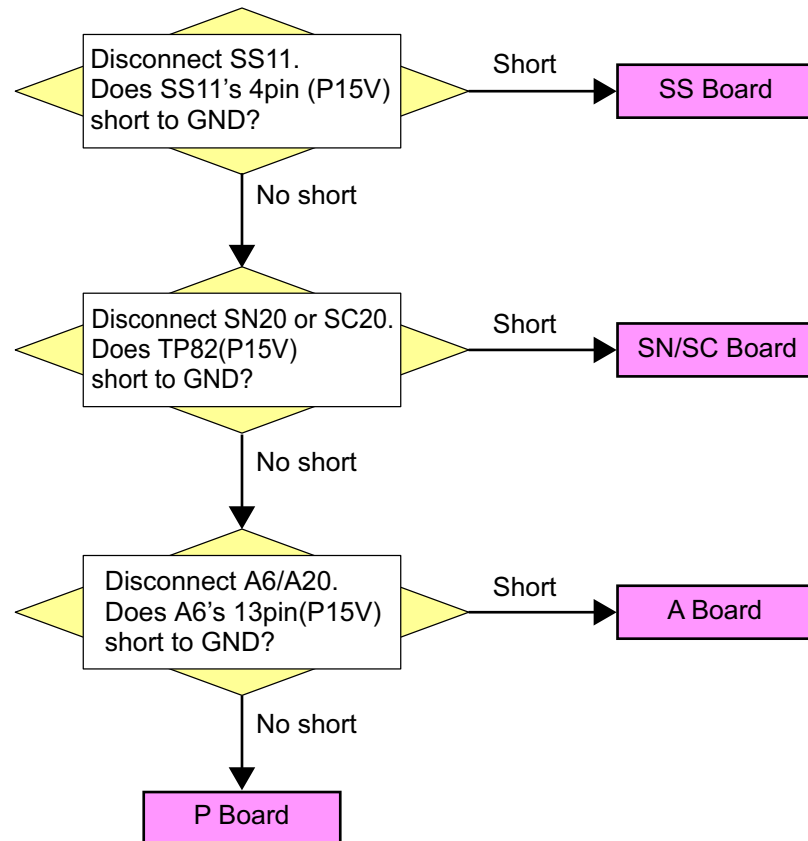
Troubleshooting Flowcharts  
: refer to 28 page

[ Model ] TH-P65/50/42VT30S, TH-P55/50/42ST30S  
TH-P65/50VT30G, TH-P50/42ST30G

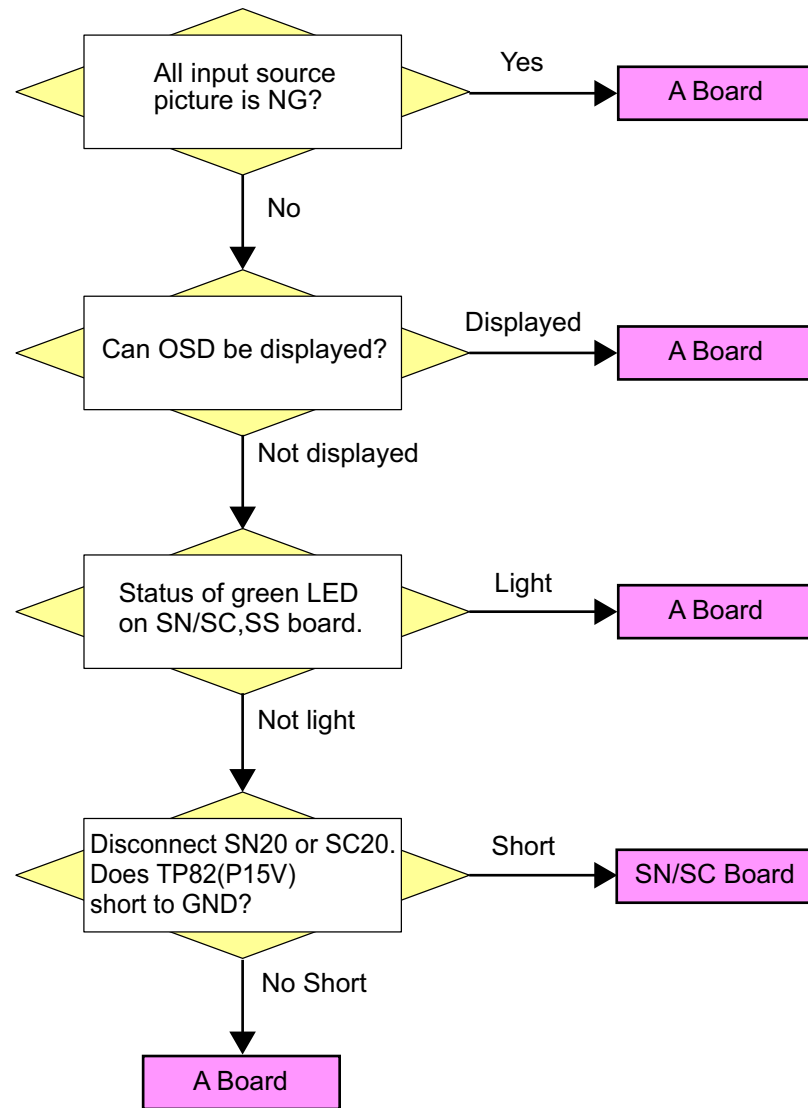
< 1. Power LED is Off : No Picture, No Sound >



## &lt; 2. Power LED is green blinking [High-speed blinks] : No Picture, No Sound &gt;

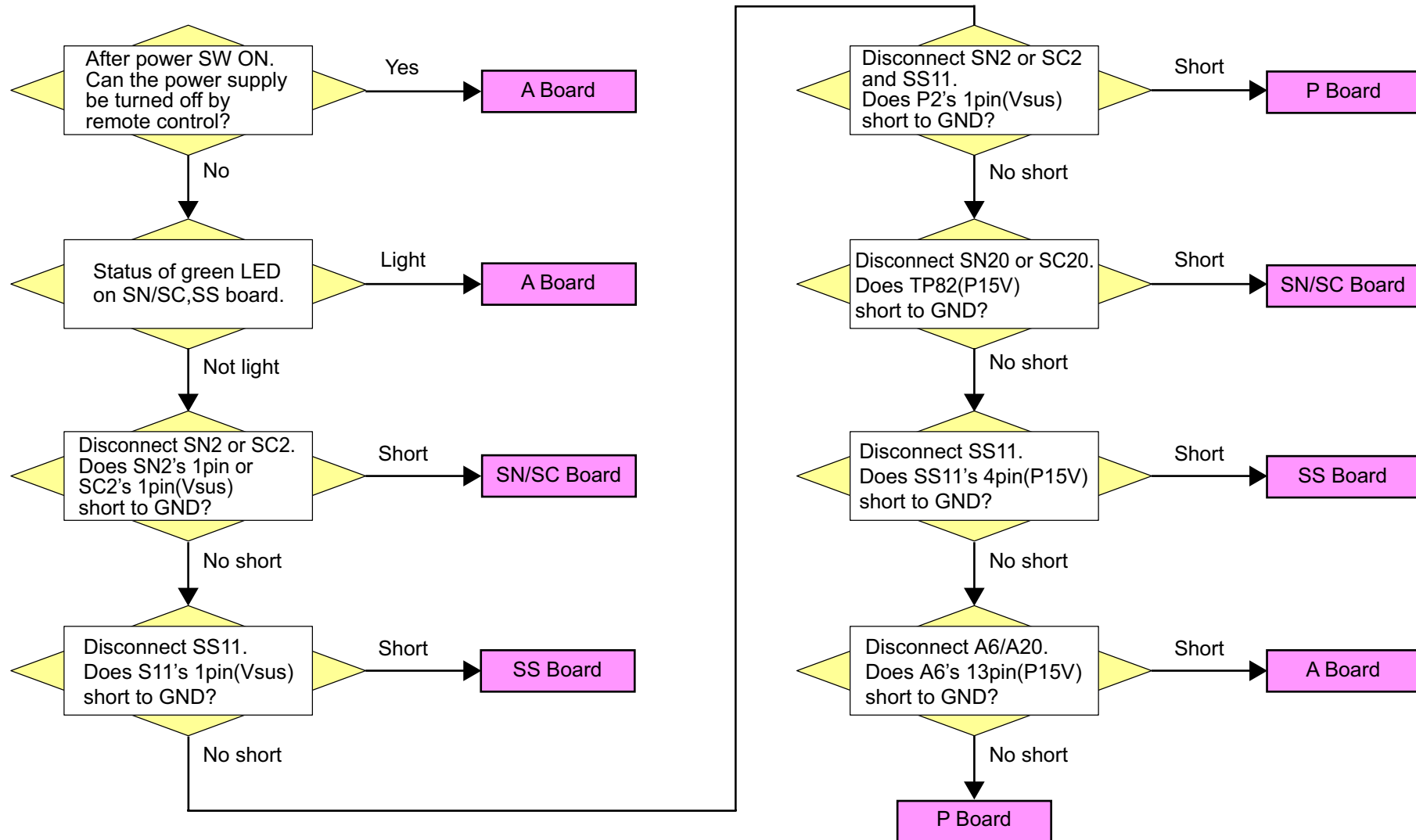


## &lt; 3. Power LED is green : No Picture, No Sound &gt;



[ Model ] TH-P42UT30S, TH-P50/42UT30G

< 1. Power LED is green : No Picture, No Sound >



## **7. Case Example of Picture Trouble**



## 7. Case Example of Picture Trouble

### [1] Model : 2011 model

### [2] Symptom : Rainbow vertical bar

### [3] Defective parts :

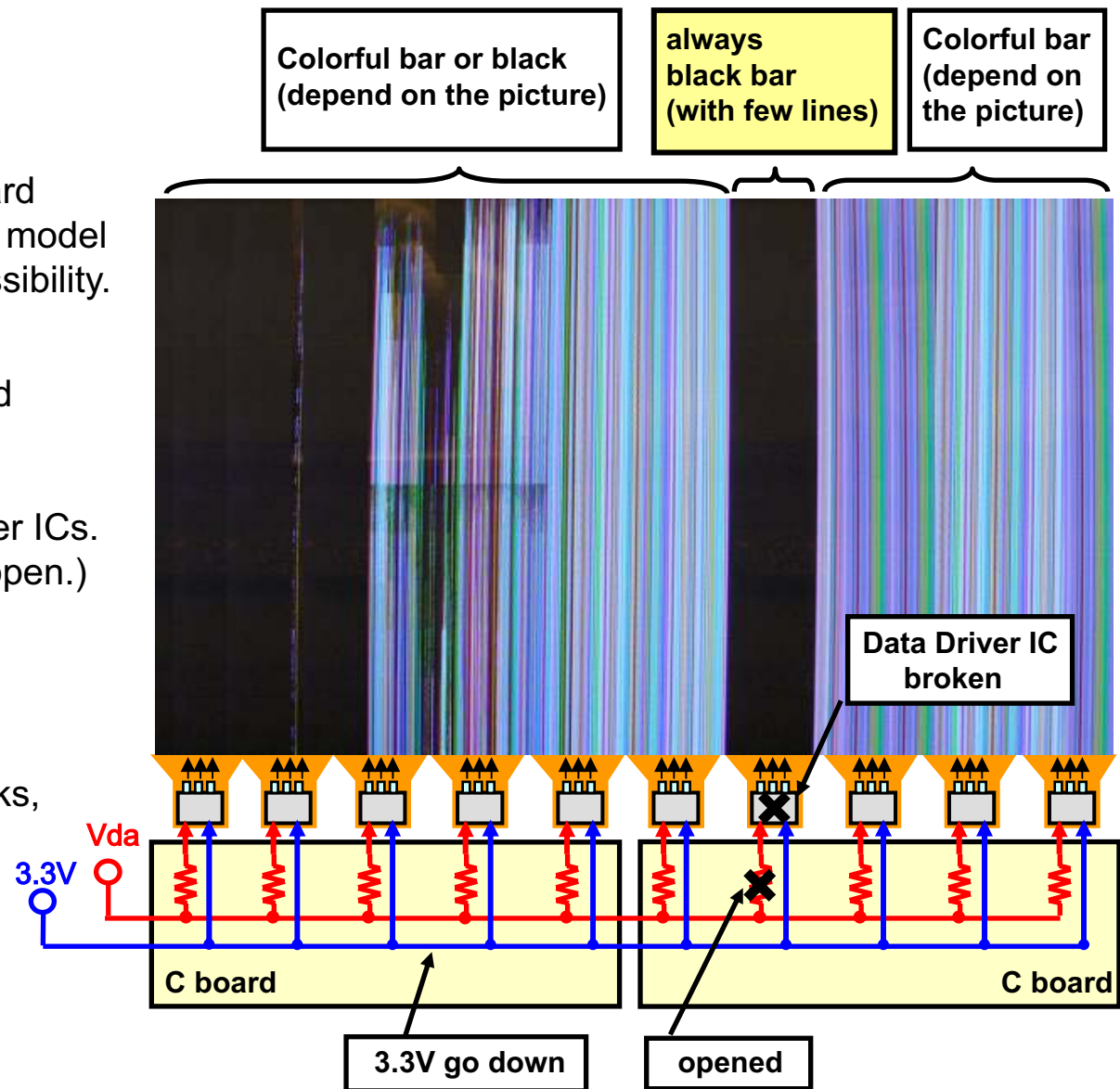
This symptom is very likely to be the A board defect for the previous model, but for 2011 model the Panel and C board defect is a high possibility.

### [4] Summary :

If one of the Data Driver IC is defective and 3.3V go down, the other Data Driver ICs don't work correctly.  
Because 3.3V is common for all Data Driver ICs.  
(Vda line is isolated due to resistor being open.)

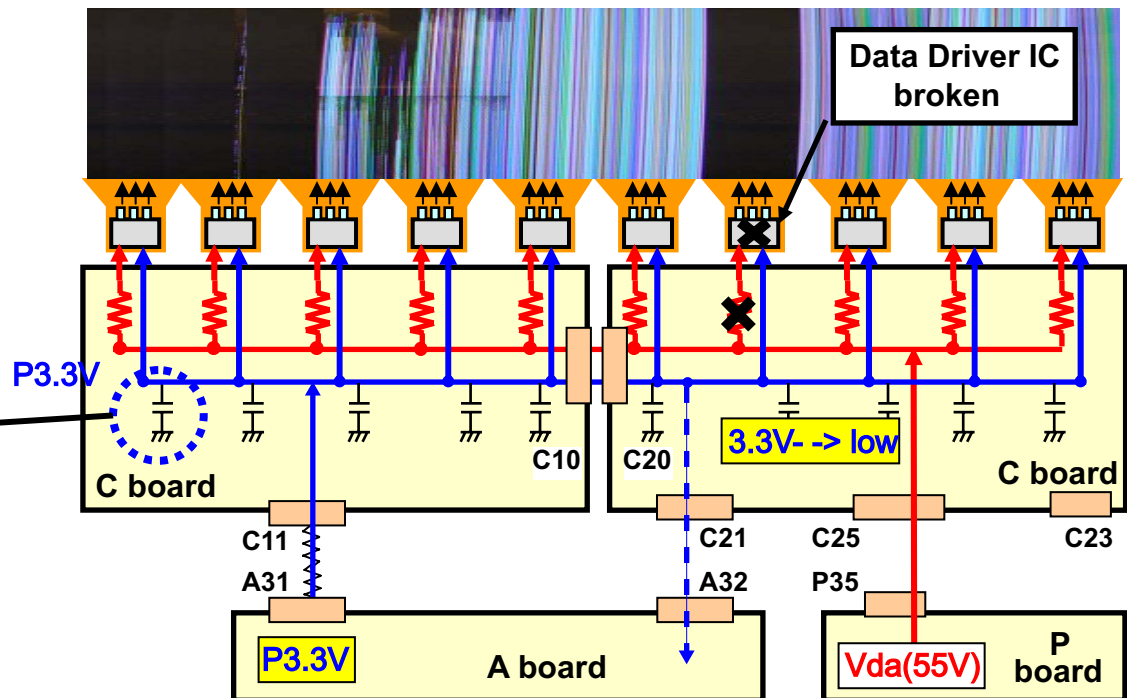
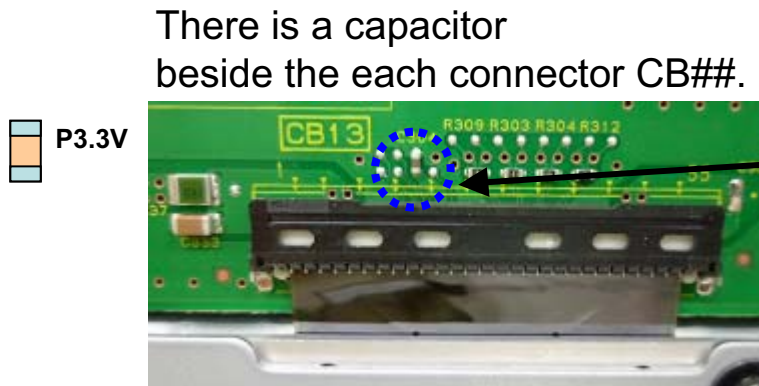
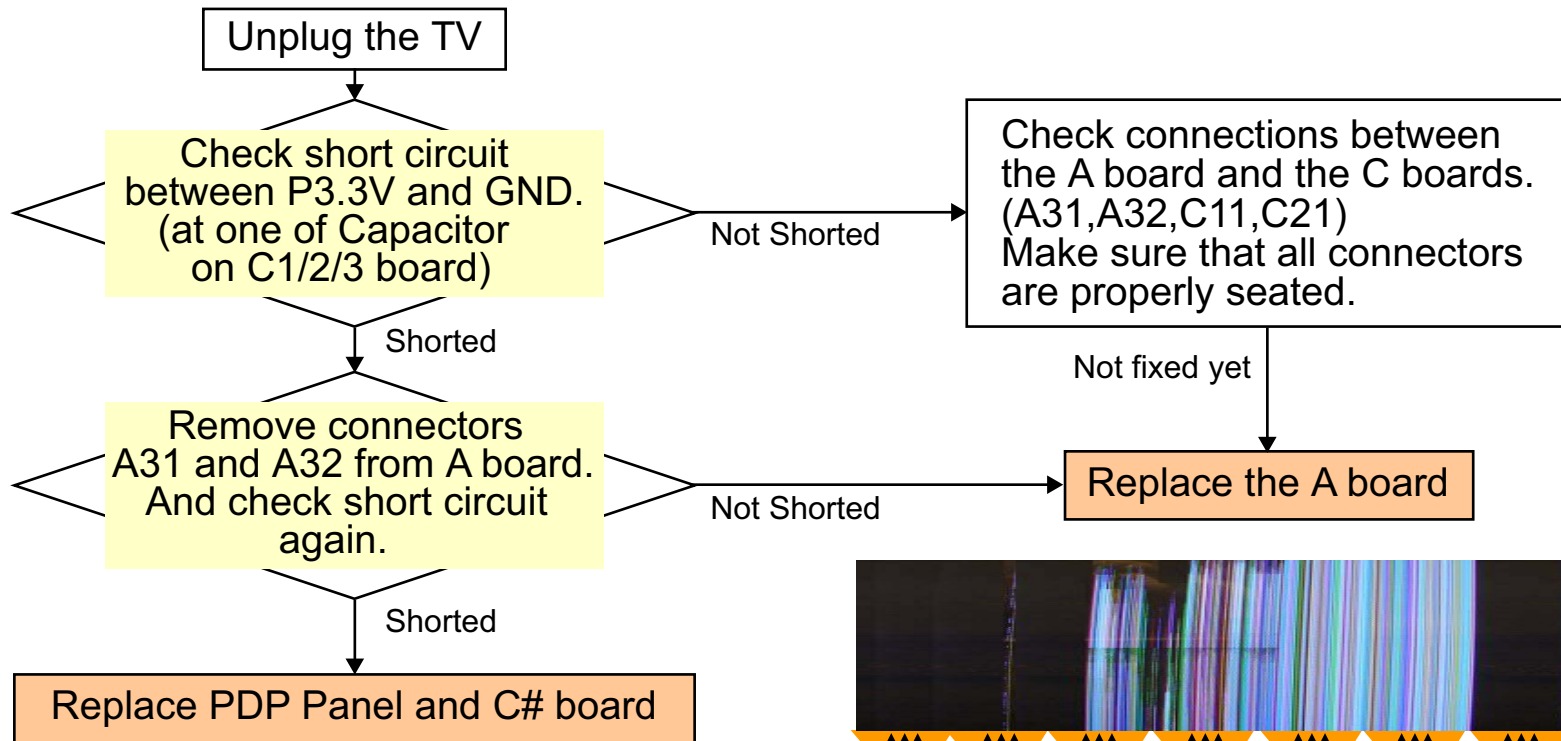
### [5] Check point ( Trouble shoot ) :

Check by displaying some images.  
If the position (length) of colorful bars change and there are some black bar blocks, the data driver IC is defective.  
If there is no black bar block, check the connection of cables between A and C board.  
If trouble still persists, the A board could be defective.



## 7.Case Example of Picture Trouble

### [6] Detail Troubleshoot : Short check of the P3.3V line



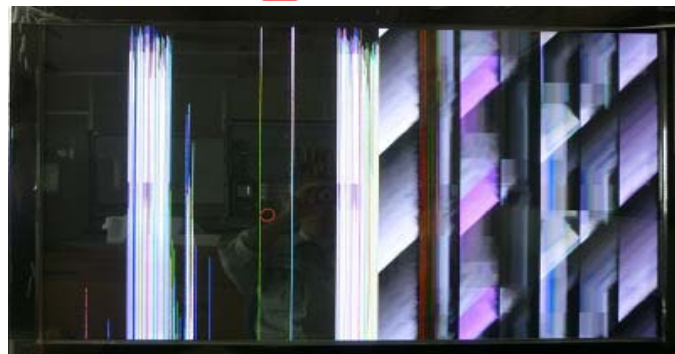
## 7.Case Example of Picture Trouble

### [7] Symptom example (another image)

Normal Image



Defective unit



## Change history

[illegible]